GREAT TRANSITION INITIATIVE
TOWARD A TRANSFORMATIVE VISION AND PRAXIS

Does Nature Have a Price Tag?

GTI Roundtable

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As political will for environmental regulation wanes, some environmentalists advocate for giving nature a market value. Barbara Unmüßig, however, argues monetization reduces the complexity of nature's functions and threatens marginalized communities. Our panelists debate the merits of putting a price tag on nature.

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Monetizing Nature: Taking Precaution on a Slippery Slope

Barbara Unmüßig

Abstract: In the wake of declining political will for environmental protection, many in the environmental community are advocating for the monetization of nature. Some argue that monetization, by revealing the economic contribution of nature and its services, can heighten public awareness and bolster conservation efforts. Others go beyond such broad conceptual calculations and seek to establish tradable prices for ecosystem services, claiming that markets can achieve what politics has not. However, such an approach collapses nature's complex functions into a set of commodities stripped from their social, cultural, and ecological context and can pose a threat to the poor and indigenous communities who depend on the land for their livelihood. Although the path from valuation to commodification is not inevitable, it is indeed a slippery slope. Avoiding this pitfall requires a reaffirmation of the precautionary principle and a commitment to democratic decision-making and social justice as the foundations of a sound environmental policy for the twenty-first century.

The Promises and Perils of Ecological Economism

Do nature's services need a monetary value? Over the past decade, members of the environmental community have been increasingly saying "yes," arguing that conservation policy must have an economic motive to get sufficient attention from policymakers and the public. Among the proponents of this new ecological economism, one can find two distinct approaches.

One approach seeks to monetize the value of nature simply in order to reveal its immense economic contribution to society. Its champions point out that the significant value created by nature and its diverse services to humanity often goes unnoticed. Quantifying its full extent, they claim, would help to generate the political will to prevent the further destruction of nature and to facilitate its rehabilitation. The best way to reveal nature's value, they conclude, is to present it in the terms policymakers understand best: money.

A second group of thinkers is taking such economism even further. They argue that monetization is only meaningful and effective if there are markets to set prices for the ecosystem services in question. Markets for such commodified ecosystem services, they argue, can protect conservation policy from the vagaries of political will. Roll back bureaucratic red tape, and let the market work its magic to save nature.

The political will to prioritize the conservation of nature is rapidly becoming an endangered species.

The line between valuation and commodification, although clear in theory, becomes blurred in practice. To be sure, valuation alone does not inevitably entail the risks to the preservation of nature intrinsic to commodification. Nevertheless, it changes how we see and relate to nature and can inadvertently pave the way for the privatization of ecosystem services that the advocates of valuation often oppose. We must, therefore, approach the issue of monetizing nature with grave caution and not allow it to weaken the precautionary principle, nor the principle of democracy itself, both of which we need for scientifically sound and socially just environmental policy.

Where There Is No Will, Can There Be a Way?

Among nature conservationists, a deep-seated frustration prevails. Although the loss of biological diversity and the degradation of ecosystems are proceeding at an unprecedented scale, nature conservation remains politically unpopular. The implementation of the political directives and multilateral commitments from the Convention on Biological Diversity has been halting at best. The biodiversity targets of the Millennium Development Goals (MDGs) have been spectacularly missed. Funds are lacking for maintaining old, let alone establishing new, protected areas. The political will to prioritize the conservation of nature over resource extraction or infrastructure development is itself rapidly becoming an endangered species.

As a result, conservationists have sought a new strategy and have settled on monetization. Although the concept of valuing ecosystem services goes back to the 1970s and has appeared in conservation debates ever since, it has gained renewed

attention over the past decade. In 2001, Kofi Annan commissioned the Millennium Ecosystem Assessment on behalf of the United Nations to reveal the unnoticed contributions of nature to human well-being.[1] Although the report, released four years later, produced no noticeable political shift in support for environmental protection, it sparked an interest in incorporating economic incentives into environmental policy. The year 2005 marked the launch of the EU's Emission Trading Scheme (ETS), which applied market principles to climate change mitigation. The United Nations Framework Convention on Climate Change (UNFCC) also began to develop a scheme known as REDD+ (Reducing emissions from deforestation and forest degradation), which some policymakers have sought to turn into a carbon offset market. In 2008, the TEEB study (The Economics of Ecosystems and Biodiversity), commissioned by the G8 member states, took the economistic approach of the Millennium Ecosystem Assessment a step further with its policy recommendations. The report sought to bring the economic value of nature into the calculation of national economic accounts and advocated for the incorporation of biodiversity offsets into domestic and international conservation policy.[2]

Offsetting ignores how unique and interconnected biodiversity is and how important it is to the local communities that depend on it.

Environmentalists, business leaders, and policymakers have all sought to make environmental protection an economic rather than just a political issue. The introduction of "no net loss" policies, which allow economic development to proceed as long as the net acreage of a specific type of ecosystem is maintained, has effected a paradigm shift in environmental policymaking. However, offsetting ignores how unique and interconnected biodiversity is, and it overlooks the importance of nature for local communities and the ways they suffer when their ecosystems are damaged. Land-use policies based on whether a company can pay for an offset, and not on what local communities and humanity need to survive, undermine basic rights and democratic principles.

Not Seeing the Forest for the Trees (Nor the People in the Forest)

As advocates of nature valuation point out, national economic accounts such as GDP remain blind to the services of nature. Such accounts likewise fail to distinguish between constructive and destructive economic activity with respect to human and ecological well-being. The razing of a forest contributes to the GDP whereas its protection, by leaving it untouched, will not. Revealing the full value of nature to the economy, advocates argue, would not only encourage stronger policy, but also support public mobilization against environmentally destructive policies and for environmentally restorative ones.

A number of improvements on national accounting systems have thus been proposed. The Genuine Progress Indicator, which has attracted the attention of policymakers across the United States and European Union, subtracts the costs of ozone depletion, pollution impacts, and loss of farmlands and wetlands from the total GDP.[3] The World Bank has begun a new initiative called Wealth Accounting and Valuation of Ecosystem Services (WAVES) to expand the reach and applicability of

such revised economic accounting systems.

Needless to say, a deeper understanding and greater awareness of the relationship of society to nature is always welcome, but the rigor and usefulness of GDP-level information remains questionable. In order to convert the information about nature's services into a form appropriate for national accounting, analysts must aggregate the data from all existing ecosystems and allocate their increased or decreased value to each nation-state. Moreover, determining an economic value for ecosystem services requires first describing all the services provided by a particular ecosystem—a formidable task.

Delineating an individual ecosystem from the complex fabric of nature poses numerous significant challenges. For example, the provision of oxygen for humans and animals to breathe is an ecosystem service of global scale. But how do we value the contribution of individual sub-systems like a single forest to this global service? We could all still breathe if one forest is cut down, but not if all forests were cut down. At a local scale, quantifying the value of a tree is problematic because even a single tree provides many services. Its roots provide benefits to the soil, its leaves provide oxygen, and its trunk could provide lumber or paper for industry. If valuing an identifiable part of an ecosystem like a tree is difficult, valuing a regional ecosystem, such as a grassland that nourishes wild animals and stores carbon in the soil, is even more methodologically intractable.

Embarking upon the path of valuation also changes the way we see and understand nature.

Beyond the daunting technical difficulties, embarking upon the path of valuation also changes the way we see and understand nature. In order to determine the value of an ecosystem for policy purposes, such as conducting a cost-benefit analysis for a new development project, we need to take into account all aspects of the ecosystem. But the value of the whole ecosystem to society is more than the sum of its monetized parts: reducing its value to mere monetary terms, even if it were technically practical, strips away its cultural and spiritual value. A bad policy can be replaced, but the holistic functions of nature cannot.

Interacting with ecosystems as economic entities and disaggregating them into various "services" thus puts us on the path toward viewing such services as mere commodities. Through disaggregation, each service can be rendered into a discrete monetizable "package" so that it can have its own market and its own price. Such an approach tilts policymaking in favor of the interests of the economically powerful. The least powerful actors—often local communities, indigenous peoples, women, small-scale farmers, etc.—get pushed to the margins, their voices ignored.

Offsetting schemes have increasingly entered the complex spheres of forest and habitat preservation. For example, with the backing of the country's agribusiness lobby, Brazil recently launched the Rio de Janeiro Green Exchange (Bolsa Verde), which allows individual and corporate landowners to buy their way out of previous legal obligation to maintain a certain proportion of their land in near-pristine condition.

The degradation of land in one area of Brazil can proceed apace with little concern, as payments for offset certificates—the conservation of an "equivalent" piece of land elsewhere in the country—simply become the cost of doing business. There are even reports of purely speculative certificate purchases where corporations buy up remote Amazonian land in order to sell forest conservation certificates to conserve land and forests that would never have been disrupted anyway.[4]

Such tradable certificates raise serious questions about the imbalance of power between market actors. Many ecosystems that are still reasonably intact are home to poor and indigenous communities. Under a trading scheme, a large corporation could purchase such land for an offset, expelling those who have depended on it for their livelihoods for centuries. Furthermore, such traditional communities have a very different concept of property than Western capitalism. No single person "owns" the land when resources are treated as a commons; however, the establishment of a market for tradable certificates depends on the principle of private property, a threat to the commons governance often found in indigenous communities. The risk of abuse when forest offset certificates are applied in the context of communal ownership are thus immense, especially since these communities lack the political, legal, and economic power enjoyed by the prospective buyer.

We must revisit one of the hallowed principles of environmental policy: the precautionary principle.

Back to First Principles

In order to prevent monetization from slipping into commodification, we must revisit one of the hallowed principles of environmental policy: the precautionary principle. It states that when an action or policy could pose a substantial risk to the environment, a very high burden of justification should fall on those seeking to take such an action. Like the classical mantra of medical ethics, the precautionary principle insists upon first doing no harm.

The precautionary principle illuminates the clear difference between a payment for preservation and a license to destroy. For example, policymakers sometimes seek to prioritize biodiversity *preservation* over agricultural or infrastructural development in a certain area, where this lack of *development* might come at a lost opportunity cost to the farmers or other owners of the land. Thus, to compensate them for the forgone economic opportunity, the state provides a direct payment to the land owners, essentially a payment for the "ecosystem service" maintained. Such conservation payments are, in fact, central to US and EU agricultural policy. No new commodity or market is created: the public (as opposed to the private) sector is the only actor to provide the compensation, and the policy aims to *maintain* nature in its current state.

Such payments for ecosystem preservation are quite distinct, conceptually and practically, from the implementation of market-based environmental trading schemes. Under a trading scheme, investors need not forgo economic development; rather, they can compensate society for the resultant destruction by paying for the preservation of an "equivalent" piece of land elsewhere. From the perspective of the

developer, this new piece of land takes the form of a certificate for an ecosystem service, but it is detached from its physical reality.

Monetization can also be appropriate in the application of the "polluter pays principle," a key part of international environmental law. According to this principle, in the event of *unavoidable* environmental damage (such as an environmental disaster), the responsible entity must provide appropriate compensation for the value of the damage. As the damage has already been done, the demand for repayment can serve as a deterrent, raising the economic stakes of future disasters. The focus is no longer on estimating the value of the ecosystems themselves, but on the cost of the necessary repair. As the repairs proceed, the cost estimate can be adjusted appropriately, making the need to estimate the value of nature in the abstract irrelevant.

Consider, for example, the Deepwater Horizon oil spill from 2010. When the drilling platform exploded, an estimated 800 million liters of oil flowed into the sea over many weeks, in one of the worst environmental disasters of its kind. The resulting damage to the flora and fauna of the Gulf region, as well as to the surrounding fishing industry, was immense. Through 2012, British Petroleum (BP), the owner, was required by law to reimburse public and private entities a total of $43 billion for the consequential damages. The damage done to the Gulf of Mexico, however, was largely irreversible: no amount of money can completely undo the damage. The counsel of the precautionary principle remains paramount: the drilling should have never started in the first place.

By viewing ecosystems and their services through a pecuniary lens, monetization can subject the fragility of nature's balance to the destructive logic and volatility of markets.

Over the past several decades, we have seen not only increasing environmental degradation, but also the erosion of the concepts of the public good and collective responsibility to preserve nature. In embracing the monetary valuation of nature as a strategy for mobilizing support for environmental conservation, environmentalists are resigning themselves to a political status quo that can only comprehend value in terms of money and markets. By viewing ecosystems and their services through a pecuniary lens, monetization profoundly changes our relationship with nature, and, if taken to the point of commodification, can subject the fragility of nature's balance to the destructive logic and volatility of markets. Even though the trend toward the privatization of public goods has been pervasive over the past decades, we should not acquiesce so easily in allowing the privatization of the most basic public good of all—nature itself. We must meet the grave environmental challenges of the twenty-first century with boldness and prudence, using the precautionary principle, along with the principles of fairness and democracy, to set boundaries that human action must not transgress.

Endnotes

1. For a recent review of such efforts, see Robert Costanza et al., "Changes in the Global Value of Ecosystem Services," *Global Environmental Change* 26 (2014): 152-158, http://www.sciencedirect.com/science/article/pii/S0959378014000685; Millennium Ecosystem Assessment, *Ecosystems and Human Well-Being: Synthesis* (Washington, DC: Island Press, 2005).
2. Naturkapital Deutschland—TEEB DE, *Der Wert der Natur für Wirtschaft und Gesellschaft—Eine Einführung* (Bonn: Federal Agency for Nature Conservation, 2012), 15, http://www.bfn.de/fileadmin/MDB/documents/themen/oekonomie/teeb_de_einfuehurung_1seitig.pdf.
3. See, for example, the FRESH (Forwarding Regional Environmental Sustainable Hierarchies) project in the EU (http://freshproject.eu/index.php) as well as recent efforts in Maryland (http://www.dnr.maryland.gov/mdgpi/) and Vermont (http://vtgpi.org/about.html) in the United States.
4. Jutta Kill, *Trade in Ecosystem Services: When 'Payment for Environmental Services' Delivers a Permit to Destroy* (Montevideo, Uruguay: World Rainforest Movement, 2014), http://www.wrm.org.uy/html/wp-content/uploads/2014/04/Trade-in-Ecosystem-Services.pdf.

About the Author

(photo: Bettina Keller, 2013)

Barbara Unmüßig is the president of the Heinrich Boell Foundation, a position she has held since 2002. She is responsible for the international work of the foundation with thirty offices abroad. Her work focuses on issues of globalization; international climate, resource, and agricultural policy; gender policy; and the promotion of democracy. In the early 1990s, she managed the UN Conference on Environment and Development (UNCED) project office of the German League for Nature and Environment and Friends of the Earth Germany in preparation for the 1992 Earth Summit. In 1992, she was a founding member—and until 2002 spokesperson—of the Forum on Environment and Development, a German NGO. From 1993 until 2002, Barbara served as the executive chairperson of World Economy, Ecology, & Development (WEED).

Roundtable

Herman Daly

I would like to add two points in light of the discussion of "natural capital" and the monetization of nature.

(1) The term "natural capital" was introduced in opposition to "financial capital," not as an extension of it, or advocacy for "monetizing nature." Natural capital uses the term "capital" in its original non-monetary sense of "a stock or fund that yields a flow of useful goods or services." The word "capital" derives from "capita," meaning "heads" and referring to heads of cattle in a herd. The herd is the capital stock, the sustainable annual increase in the herd is the flow of useful goods or "income" yielded by the capital stock—all in physical, not financial, terms, and independent of prices.

Problems certainly arise when we take money in the bank growing at the interest rate as the standard by which to judge whether natural capital is growing fast enough, and then liquidate populations growing slower than the interest rate and replace them with faster growing ones. Furthermore, money in the bank is a stock that yields a flow all by itself without diminishing itself, and without the aid of other flows. Can a herd of cattle yield a flow of additional cattle all by itself, and without diminishing itself? Certainly not. The existing stock of cattle transforms a resource flow of grass and water into new cattle faster than old cattle die. Like cattle, real capital transforms resources into products and wastes, obeying the laws of thermodynamics. Capital is not a magic substance that creates something out of nothing. Thinking that real capital can behave like financial capital is a prime example of the "fallacy of misplaced concreteness," i.e., mistaking the abstract symbol for the concrete reality. A good symbol should not be allowed to do things that the reality it symbolizes cannot do. If you object to the term "natural capital," just substitute "natural stocks or funds that yield a useful flow of goods or services into the future," and note that this is very similar to the economic concept of real capital, but very different from financial capital.

(2) There is certainly an important trade-off between how much of the world should be transformed by human beings into goods, and how much should be left in the natural ecosphere. This is fundamentally an ethical and ecological decision, but has economic consequences. It is a macro-level, price-determining decision, not a micro-level, price-determined decision. Imagining pseudo-market prices for nature does not help to make this macro decision. But once physical limits to resource throughput and economic takeover of the ecosphere have been set on ethical and ecological criteria, we still have the problem of allocating the scarce resources to different uses. This is the rationing function of prices and is necessary when ecological footprint (demand) greatly exceeds carrying capacity (supply).

The difficulty here is not with pricing access to nature, but with an excessive scale of the human economy. If you don't want to put some rationing prices on nature, if you want it to be free, then cut the scale of the human economy drastically. If some people have too many ration tickets and others too few, then redistribute them. But while doing that it would help to keep clear the difference between price-determining and price-determined decisions. Showing how high the rationing prices for natural services would be if we actually had to account for them, and how impossible it would be to pay them, is a useful way of illustrating to people who have difficulty in seeing beyond money that the physical scale of the economy is far beyond any optimal or even sustainable level.

About the Author

Herman Daly was an ecological economist and Emeritus Professor at the University of Maryland, School of Public Policy. From 1988 to 1994, he was a Senior Economist in the Environment Department of the World Bank. Prior to that, he was a professor of economics at Louisiana State University, where he taught for twenty years. He has served as Ford Foundation Visiting Professor at the University of Ceará (Brazil), Research Associate at Yale University, Visiting Fellow at the Australian National University, and Senior Fulbright Lecturer in Brazil. He was co-founder and associate editor of the journal *Ecological Economics*. He wrote extensively on theorizing the steady-state economy and co-developed the Index of Sustainable Welfare. He held a PhD from Vanderbilt University.

Neil Glazer

I wholeheartedly agree with the many excellent points Barbara raises in her essay, including her overarching point that it is time to embrace the precautionary principle in making our policy decisions. Aligning public policy with that eminently sensible approach will be no small task, but if ever the time has been right, it is now.

Economics is a science of abstraction. All valuations and monetizations translate a range of values into a single value, typically dollars. In excluding a more complete and pluralistic set of values and engaging in a highly reductionist exercise even with respect to those values they purport to incorporate, economic valuations constrain our ability to make wise decisions. To be sure, in at least some instances, monetary valuations may serve as proxy indicators of relative significance, and even though the frame of reference is highly anthropocentric, such valuations may be somewhat useful in helping some people grasp more firmly some idea of the magnitude of some of the planet's many problems.

But these valuations are imperfect information, compounded by incomplete data sets, questionable methodologies, exclusion of non-quantifiable values, and other inherent flaws. This is not, however, a problem unique to economic valuation. Society as a whole is operating under conditions of ignorance, making decisions (and failing to make decisions) based on incomplete information. As we all know, such is the way to ruin. We will not find a way out of this box so long as we are stuck within it, failing to see through it the greater systems in which our entire human endeavor is firmly embedded and interconnected.

Economists call this the problem of asymmetric information, and in its simplest form, it is a problem of unequal bargaining power. If one party to a transaction possesses superior information relevant to the deal, there is a high likelihood that the other party will make a less than optimal decision than she would if she possessed that information. Perhaps she would not make the deal, or perhaps

she would but only under different terms. To frame this microeconomic issue in biophysical terms, suppose a producer markets a product but fails to disclose that it contains some highly carcinogenic toxin. Not only will the outcome(s) be market-distorting (sub-optimal because resources will be allocated to purchasing that product instead of a possibly healthier alternative), but they will be incredibly dangerous. Depending on how many units are sold, one would expect cancer rates to rise among consumers of that product. If, one way or another, this results in a potent toxin being introduced into waste streams, there will be potential ecological consequences as well. Transaction by transaction, asymmetric information has ripple effects.

Conditions of asymmetric information can be pervasive, and in the case of ecological impacts of economic activities, they are utterly systemic, leading to poor decisions in every sphere and stratum of society, including regulatory failure after regulatory failure. There is one assumption that many sustainability advocates share with the economists: that we have more perfect information conditions than are actually so. In other words, there are assumptions that information is available, either directly to confront a set of problems (perhaps a complex causal web affecting networked ecological systems), or indirectly to achieve monetary valuations to send price signals that it is hoped will serve as reasonable proxies for ecological values. This is not entirely true. There is of course a growing body of literature being generated by growing numbers of people working in the sciences, utilizing better and better technologies and modeling methodologies to understand existing and shifting states of ecological systems up to and including some planetary boundaries and the overall earth system itself. I am increasingly impressed as I learn about one or another effort to map and monitor the planet's ecosystems, and hopefully the resources necessary to further this work will continue to grow.

But there is no parallel effort to capture all the relevant information concerning the ways economic actors impact ecological systems, and even less so with respect to the direct, indirect, and cumulative effects of those impacts on wider systems. Absent this information, we are looking only at one side of the equation, one part of the picture. I do not see how this makes sense from a systems perspective, by which I mean the self-organizing, self-regulating human social systems that are both generating these impacts and capable of exercising will, forethought, and restraint. There is a rapidly growing, voluminous outpouring of corporate sustainability reports, but they are of dubious quality and questionable utility. They are too often exercises in greenwashing, at best selective recitations of "progress" with little in the way of meaningful, facts-on-the-ground reporting of the kind of localized

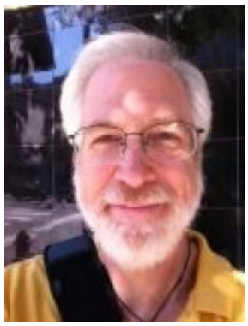
information Unmüßig points to in her essay. The problem is that rarely is there any underlying data, and pretty much never is the data adequate to understand much of, well, anything. Monetizations in this context only serve to obfuscate even more, increasing faux transparency to such extraordinarily high levels of opacity that it is difficult to understand even what the point is.

The root cause is the economist's hubristic insistence that he and he alone has the capacity to translate biophysical facts into a language we can all understand. The economist's language is helpful, but I do hold out hope that a sufficient percentage of the public and our policy makers are capable of understanding at least rudimentary levels of another, far more relevant language, which is that of science. If we could only liberate all of this information, there would at least be a very good shot that smart people the world around will be able to process all that data, develop bodies of information and knowledge bases, and start to pressure for better policy, and to convey the stories and teachings—and facts—that are to me the only way out of this box and into a transition to an authentically sustainable future.

Where there are conditions of asymmetric information, economists have a rather simple solution: the least-cost provider should supply the information. The problem is that polluters have zero incentive to share accurate and timely information about their pollution. That can be cured, and we can start with one of the lightest possible forms of regulation: mandatory information disclosure. By forcing disclosure of biophysical impacts in biophysical terms, we can open a vast pipeline of continually flowing information useful to those working in the sciences, as well as policy makers, journalists, NGOs, consumers, investors, and anyone else interested in such things.

I do not reject wholesale the valuation exercise (though I do reject commodification), but I think it needs to be made a bit more honest, framed in a way that more accurately and clearly contextualizes and discloses the limitations of those approaches, tempered by real facts and real data, which ought to be the centerpiece of the conversation. What we need to demand is more scientific literacy, ecological literacy, and ecological honesty about what we are doing to the planet and what we need to do to transition to a meaningfully sustainable sustainability. It seems only right to bring those actors whose operations, supply chains and products are most impairing the earth system into the conversation as ecological truth tellers. I think doing so will make possible many of the fantastic ideas and solutions advanced in discussions such as this.

About the Author



Neil Glazer is an attorney, on extended leave from private practice to focus on public policy work. His primary interest is developing policy tools for the transition to an ecologically sustainable economic system. For the past two years, he has worked with Foundation Earth to design legislative policy aimed at achieving corporate ecological transparency. As an attorney he specializes in complex litigation, with expertise representing plaintiffs in cases involving international human rights, international and domestic environmental protection, constitutional law, antitrust law, financial and securities markets law, and intellectual property. He is a graduate of the University of Pennsylvania and Harvard Law School.

Robert Hickey

I believe that the monetization of natural capital is a useful tool to put sustainability on the political and economic map, although it is not a long-term solution. Such an approach can highlight the value of ecosystem services within the context of the current, growth-oriented economic paradigm. Until there is a cultural value shift, I do not believe that putting this value in terms that are unfamiliar to most of us would be as useful. However, I do admit that putting it both in monetary terms and in terms of its "pricelessness" to human survival (since the "value" of ecosystem services which, since many of them are non-substitutable, are impossible to properly value in monetary terms) is useful, especially with regard to promoting a more inclusive economic paradigm. Not until that shift occurs, however, can we ignore quantifying these services, as the idea of valuating these services needs traction in the current paradigm in order to facilitate the transition to a new, more holistic one. I guess I am a believer, perhaps naively, that systems almost always need to be changed from within.

I would also like to question the assumption that more democracy, as Unmüßig purports, is needed "for scientifically sound and socially just environmental policy." Since the value shift among global citizens is in a transition phase, I am not convinced that there is a strong enough correlation between increased democratic processes and environmental sustainability to assume that promoting democracy will, in turn, result in environmental protection at the speed or depth needed to stave off disaster. Not until a cultural value shift towards human harmonization with our natural environment takes place will democracy equate fully to the preservation of natural capital (and especially not a democracy that is "captured" by special interests).

I thought about this (certainly rather unpopular opinion) for a while. In Europe, to some degree, the layered structure of the European Union allows both a diffusion of competencies and a diffusion of responsibilities. This has a positive effect of enabling European leaders to mainstream

non-economic based targets into their policy agenda. High levels of unemployment, weak legal systems, and low levels of economic growth are still widely seen by European citizens as failures at the national level. While there are Eurosceptic parties across the continent which criticize, among other things, a perceived 'democratic deficit' in EU institutions, it is this democratic deficit which allows the European Union to have a longer-term view in its policy development process. Since there is some insulation between EU citizens and policymakers in the European Commission (although now mitigated to some degree by the passage of the Treaty of Lisbon and an increase in powers for the directly elected European Parliament), those who work in some EU institutions do not have the same level of immediate evaluation by their constituents as happens at the national level. Simply put, they are not as worried by unemployment numbers and the effects that would have at the ballot box as leaders in more direct democracies would have. Of course, this rests on the assumption that employment and environmental degradation are at odds, which is not always, but sometimes, the case, such as when it comes to taxing energy prices (although this does help stimulate innovation).

The second idea here on which I wanted to comment was the assumption that applying the precautionary principle to the monetization of ecosystem services (resulting in not having a monetary value set on them) will help slow down, stop, or reverse the environmental degradation through the monetization of nature, an assumption for which I have seen no evidence.

To clarify, the precautionary principle is used in the EU "where scientific evidence is insufficient, inconclusive or uncertain and there are indications through preliminary objective scientific evaluation that there are reasonable grounds for concern that the potentially dangerous effects on the environment, human, animal or plant health may be inconsistent with the chosen level of protection." One important aspect of using this as a foundational principle for policymaking is where the burden of proof is positioned: with the precautionary principle, it is assumed that a particular technology, policy, or medicine is harmful, and that in order to be allowed, an acceptable level of safety must be proven. More conventional approaches to risk management assume that technologies, policies, and medicine are not harmful, and that to prevent their rollout, unacceptable levels of harm must be proven.

It is my contention that the risk of utilizing the precautionary principle and not taking action, in this case, itself creates risk. By not valuing ecosystem services in terms that current policymakers can understand, delays and misunderstandings will slow down progress towards the development of

beneficial public policies and achieving shifts towards an environmentally sustainable global paradigm.

I understand that this does not seem ideal, but it is a means to an end where, I think, the means justify the ends—although this does not mean that my mind could not be changed if I was shown clear "indications through preliminary objective scientific evaluation that there are reasonable grounds for concern" (the conditions which should be met to use the precautionary principle) that monetizing nature sets the grounds for justifying its liquidation.

About the Author

Robert Hickey is an Editor at Western Governors University and an Editorial Consultant at Crimson Interactive. From 2009 to 2015, he was a Project Officer at the Science, Technology and Innovation Policy Programme of the Applied Research and Communications Fund, a premier think-and-action tank located in Sofia, Bulgaria. His work focuses on energy and environmental policy, citizen participation in policymaking, the evaluation of research and innovation systems, and improving the understanding and promotion of sustainable innovation. He is also a PhD candidate at the International Business School in Botevgrad, Bulgaria, where he focuses on the potential of energy efficiency improvements in buildings to help address global climactic and energy challenges while promoting, or at least unencumbering, economic growth.

Jutta Kill

I would like to highlight a few observations that have struck me while following this discussion sparked by Barbara Unmüßig's paper and while preparing a discussion paper myself.

1) Many insist that valuation, on one hand, and monetization and commodification, on the other, are different conceptions that should not be conflated. The act of describing something in economic terms and assigning an economic value to it does not automatically involve commodification or pricing. The political question, however, would seem to be not whether economic framing and valuation of "nature" logically entails commodification, but whether it encourages it in practice. The economic figures produced by the methodologies, mapping exercises, statistical reporting, etc.—and more importantly, the idea that such figures have intellectual standing—are not ivory tower abstractions. They will be used in the context of the currently predominant politics of power that favor privatization and economic growth at the great ecological, social, and economic cost we all know too well. Processes that appear, or can be presented as, separate, distinct, and isolated actually co-evolve, interact, and reinforce one other. In her paper, Unmüßig warns of the slippery slope from economic valuation to commodification. I would argue that looking at how the debate around economic valuation of "nature" has evolved over the past two to three decades, and considering the context of the financialized world that currently shapes political decisions and policymaking, the economic and monetary valuation of ecosystem services slope will be so slippery that once on that path, the sliding into commodification and pricing will be inevitable.

The mapping of Siam by British surveyors that Thongchai Winichakul describes in his book *Siam Mapped: A History of the Geo-Body of a Nation* offers an interesting parallel. Western mapping techniques deployed over a century ago did not inherently constitute a land grab or express new kinds of nationalism or colonialism. However, had Siam not been mapped using the relevant

methodologies and norms of Western cartography (as opposed to those that had previously been used in Siam) and had those norms not been adapted defensively by Thai elites for their own purposes, it would have been more difficult for the British and French colonial powers to gain control over large swaths of what are now Burma and Cambodia.

(2) Over the years, I have trawled through dozens of documents that explained the economic calculations used for pricing in "payment for environmental services" and offset schemes, both for carbon and for biodiversity. The initially most surprising observation was this: even where elaborate measurements in the field and subsequent entering of that data into complex calculations had yielded a set of figures on the basis of which a monetary value for the subset of "ecosystem services" relevant for the particular PES program had been determined, the price offered in the PES program or offset project bore little semblance to the monetary value calculated—with great effort and at large expense—for the relevant "ecosystem services." The actual level of payment was usually determined from a mixture of project implementation costs, costs for alternative options (e.g., in the case of payments for water regulation, the cost of a water treatment plant), available CSR funds or government program budgets and 'willingness to pay' surveys, or the price for which the "service" could be bought on secondary markets (carbon). As mentioned above, this was true even when economic figures were available for the respective "ecosystem service" in the given location. Why was this so? Perhaps one explanation lies in the fact that the economic valuation that was done—notwithstanding the limitations and inherent flaws involved that have been mentioned by many in this stream of discussion—came up with numbers than far outstripped the available CSR or government program budgets.

(3) There is an argument that some economic valuation of "ecosystem services" is useful in lawsuits or official negotiations over compensation packages. Unmüßig refers to the Deepwater Horizon oil spill as one such example where judges, or negotiators for communities seeking compensation from companies or government agencies, might benefit from better information about the economic value of the land they lost or the damage caused to "nature." But would more detailed assessments of the economic value of the "nature" in question really contribute to a better outcome? A monetary figure has different meanings in different contexts. In most justice systems, a fine is not understood to be a certain amount of money that has to be paid to close out, once and for all, an interaction between perpetrator and victim. Instead, it is merely one symbolic moment in a process that may include acknowledgement of moral or legal wrongdoing, an apology, further reparations, imprisonment, ongoing obligations,

and so forth. It would seem to be that the issue is not the economic "accuracy" of the fine (even if this could be determined—which is impossible), but rather its place in a larger, socially accepted scheme of reckoning. Thus the claim that "economic valuation" is a way of setting penalties or compensation payments more "accurately" may risk damaging the legal and moral fabric that helps hold a legal system or a society together. Such hard figures might be given more weight than non-monetary aspects of the legal system, and the polluter might increasingly be able to claim that the case was closed with the payment—another slippery slope where the slow slide down towards the unintended side-effects can already be observed.

I conclude with the two considerations that held most weight in convincing me that economic valuation is a great risk that will hinder rather than help bring about the transformational change needed. First, we can see the application of economic valuation in the real world and the damage that application has in far too many cases already done to communities who depend on and defend their territories against outside decisions that will destroy the land that provides them with a livelihood.

And finally, adopting someone else's frame—the frame that sees "nature" in a way that capital does—by default requires devaluing and undermining the values we (used to) consider worth fighting for. That would likely entail losing moral authority and legitimacy, at least over time. Adopting the concept of economic valuation means adopting the values of actors whose business model is built on limitless growth and the associated wrecking of "nature"—and many people's livelihoods.

About the Author

Jutta Kill, biologist by training, has worked as activist, campaigner, and researcher since 1993. She combines academic and action research with campaigning in support of forest communities whose traditional economies and ways of life are threatened by deforestation and false solutions to the deforestation and climate crises. Her research has highlighted the role of voluntary certification schemes, carbon markets, and the new economy of nature in maintaining ecologically unequal trade and violating the rights of indigenous communities. She has documented the local impacts of numerous projects that produce carbon credits traded in international carbon markets and has authored reports on the effects of REDD and biodiversity projects throughout Africa and Latin America.

Carolyn Raffensperger

I agree with Barbara Unmüßig's premise that we need to return to first principles including the precautionary principle and the polluter pays principle. One way to do that would be by reframing the conversation with concepts she mentions only briefly, such as the public good. Reframing the conversation would challenge the rules driving capitalism's approach to ecosystem services. If the basis of the economy is capital, then we will continue to wrestle with monetization and commoditization, which is the language of capitalism. But if the basis of the economy is actually the Earth, and if the Earth is a commons, then we will use valuation appropriately—to assess the potential harm of a project for purposes of making polluters pay, obtaining appropriate assurance bonds, etc.

Predicating the discussion on the commonwealth of the natural world invites a public trust theory of government as the steward or guardian of the commons. Valuation and accounting principles can be used by governments to report on the status and well-being of the commons to commoners. At the present time, audits of the commons are being done in various jurisdictions to assess the success or need for restoration or protection of specific commons such as salmon fisheries.

I would urge a few additional first principles. One, the principle of subsidiarity suggests that government size and budgets must be tailored to the commons under a particular jurisdiction. Two, free, prior, and informed consent of the community must be obtained before an action is taken that threatens the commons and the interests of future generations. Informed consent is emerging as a right of community to protect their commons. An expression of this right can be found in places such as the UN Declaration on the Rights of Indigenous People. The Royal Bank of Canada will not fund a project unless the project proponent has obtained the free, prior, and informed consent of any indigenous community affected by the proposal. Three, future

generations' interests in the commons must be defined, asserted, and protected. It is those interests that compel use of the precautionary principle.

Essentially, what we need is to make clear that destroying the commons of the Earth is fundamentally unethical. The precautionary principle; free, prior, and informed consent; and the interests of future generations put those ethical questions to the fore. In sum, the precautionary principle will always be on a slippery slope where financial capital is the treasure that we seek to protect. When we understand the natural world as the common treasure that we seek to protect for present and future generations, then the precautionary principle and other first principles fall into place, and we are more likely to leave a healthy world to those generations to come.

About the Author

Carolyn Raffensperger is Executive Director of the Science and Environmental Health Network. In 1982, she left a career as an archaeologist in the Southwestern United States to join the environmental movement. As an environmental lawyer, she specializes in the fundamental changes in law and policy necessary to protect public health and the environment. She is best known for her work on the precautionary principle and developing a legal framework to assert the rights of future generations to a habitable planet. Carolyn is co-editor of *Precautionary Tools for Reshaping Environmental Policy* (2006) and *Protecting Public Health and the Environment: Implementing the Precautionary Principle* (1999).

William Rees

I would like to raise a few issues regarding the pros and cons of "valuing" nature in light of Barbara Unmüßig's piece.

First, while it is true that quantification and monetization are not the only way to value ecosystems services, or nature more generally (or anything else for that matter), this is usually what economists mean when they talk about "valuation." The general purpose of the exercise is to aid in decision-making about development options, particularly in the context of benefit-cost analysis (BCA). Surely, economists argue, it is useful to know the worth of a natural asset before deciding on its fate. Monetary valuation is the key; it theoretically enables rational trade-offs among options ("rational" being based on self-interested utility maximization in strictly monetary terms). Interested in conservation? If nature is so valuable, then all you have to do is prove it—a no-development decision based on the value of ecosystem services is theoretically possible. If, on the other hand, we find that the benefits of development (e.g., of a wild river for hydropower) exceed the estimated monetary benefits of wild nature, then it would be irrational to forgo development. It is easy to see why BCA has historically been sold as conceptually elegant and theoretically air-tight; indeed, it is sometimes considered the most powerful policy-relevant tool in the economist's kit bag.

Of course, the assumption of BCA is that all significant costs and benefits associated with a development proposal can be identified, quantified, and monetized. Indeed, a truly economically efficient decision is one in which benefits not only exceed costs, but in which the preferred version of the project maximizes this difference. BCA is therefore often politically useful. What politician wouldn't like to announce the approval of a mega-project that is not only good for society but that maximizes potential benefits?

There is, however, a non-trivial problem—it is both theoretically and practically impossible to identify, quantify, and monetize all important present and future ecological costs associated with

any development. For example, if we consider just what has been called the "functional transparency" of many ecological services, some will remain unknown unknowns until they have been lost, i.e., until after the project is up and running. The bottom line? The basic assumption of BCA cannot be satisfied.

To be fair, there is usually a discussion of possible hidden impacts and of "intangible" benefits/costs that are difficult to price. However, this is often the weakest part of the analysis and the most frequently ignored—people prefer at least the illusion of hard numbers. So it is that many BCAs have been shown to be biased in favor of development (and even an unbiased analysis may be deeply flawed). On all such grounds, opponents of BCA dismiss this strongest tool in the economist's kit bag as a form of crackpot rigor.

So much for 'the valuation of nature as defense of nature' in its most practical context.

Second, as implied above, mainstream economists typically argue that monetization enables the comparison of apples and oranges, i.e., that a dollar's worth of apples is equivalent to a dollar's worth of oranges (or ecosystems services, etc.) regardless of quantitative, qualitative, or any other differences. The collective wisdom of all players in the market automatically takes such differences into account in the resultant pricing.

Of particular relevance to this discussion, such theoretical 'commensurability' leads easily to belief in the substitutability of various forms of 'capital' and thus to the 'weak sustainability' criterion:

"A society is sustainable if each generation inherits from the previous generation at least an equivalent per capita value of natural capital, finance capital and manufactured capital, taken in the aggregate."

In other words, sustainability requires that the total dollar value of wealth-producing assets remains constant or grows on a per capita basis between generations.

This produces the ludicrous situation in which vital natural capital can be liquidated provided that the monetary value of remaining stocks (or the income derived from its liquidation) rises in inverse proportion to stock size (which it likely will because of increasing scarcity value). Countries whose monetary investments or savings keep pace with the destruction of their natural capital are deemed sustainable by this criterion. In short, mainstream analysis declares some of the most ecologically irresponsible nations on earth to be sustainable; clearly, the valuation of nature in this context does

nothing to ensure its conservation/preservation. (Mainstream economists are confident that human ingenuity can overcome losses of nature's services. If technological gains and human-made capital can substitute for natural capital at cost or better, the loss of nature per se is irrelevant.)

Third, the frequent assumption that the high and rising value (price) of nature's goods and services will lead to its conservation is particularly invalid for open-access resources. For example, bluefin tuna are skyrocketing in value with rising demand for quality sashimi around the world and the increasing scarcity of the fish. (A single individual will sometimes sell for several hundred thousand dollars.) This makes it profitable for fishers to continue harvesting down to the last specimen since their incomes may be constant or growing with capital depletion. Since politically-determined quotas are ineffective, I suspect we will see the market-driven extinction of the highly valued bluefin in this generation.

What is the lesson here? There may be no harm in monetizing ecosystems' goods and services, and society may sometimes learn much that is useful in the process. However, if we really want to save nature (and ourselves), then we cannot rely on short-term market costs and prices or other monetary metrics. It will generally be necessary to stand firm on philosophical, ethical, or moral grounds and hope enough other people join the cause to clinch a favorable decision. Often, today, what are really multi-value political choices are being made on spurious economic grounds.

About the Author

William Rees is a professor at the University of British Columbia's School of Community and Regional Planning (SCARP). He founded SCARP's Environment and Resource Planning concentration and served as director from 1994 to 1999. His research focuses on the public policy and planning implications of global environmental trends and the necessary ecological conditions for sustainable socioeconomic development, and he is best known as the originator of "ecological footprint analysis." He is also a founding member and former president of the Canadian Society for Ecological Economics; a co-investigator in the Global Integrity Project, aimed at defining the ecological and political requirements for biodiversity preservation; a Fellow of the Post-Carbon Institute; and a Founding Fellow of the One Earth Initiative.

Neera Singh

I think it is critical that we pay attention to what monetization of nature and a certain way of valuing nature does to human ways of relating to nature and to each other (and to our humanity). What is the ontology of human beings (and the possibilities of human becomings) that underpin the ecosystem services and especially "payments for ecosystem services" discourse? We know the limitations of the *Homo economicus* model of human beings. The problem is not that we have gotten who we are as humans (and we can possibly be) wrong, but that this conception produces such beings and "payments for ecosystem services" extends this logic to a very sensitive area, that is, human-nature relations. Instead of a relational, communicative, empathetic being whose sense of the self can include a lot more that lies outside of one's skin, the myopic visions of self and individual actors is dwarfing humans and distorting human subjectivities. The now-dominant ways of valuing nature molds human-nature relations using economic rationality as the frame. The substitution of affective and communicative ties with market-based exchange and a focus on suffering and sacrifice is really dangerous (conservation entails sacrifice and needs to be compensated with financial incentives).

A central problem in the current ways of valuing nature, as I see it, is about what is being valued in the process—ecosystem services (nature at the service of humans), even more expansively "nature," or human-nature relationality and communicative possibilities. If we value the communicative relation that humans have (and can have) with nature/non-humans, and what Donna Haraway terms as the "encounter value" of these relations and inter- (and intra-) actions, then I believe that the conception of ecosystem services would transform.

For me, this interdependence is best put by a Dongaria Kondh woman, who as part of their struggle to save the Niyamgiri hill from mining in Odisha in India, says, "We need the mountain, and the mountain needs us." This interconnectedness and attention to human labor and care that goes

into conservation is missing from the ecosystem services discourse that sees conservation only as a burden—and not as a potentially joyful activity that can bring people together, and can lead us to become better humans.

How can we honor the gift of conservation care labor that goes into the production of ecosystem services in ways that it is seen as a gift rather than as production of a service whose exchange can be sealed with a payment? And can we see these gifts—gifts by nature, by people who live in ecologically sensitive landscapes, gifts emerging from human-nature relations—as invitation for long-term exchanges in sharing the burden and joy of environmental care? For a start, we need ecological humanities (and even possibly posthumanities) in addition to just ecological economics.

About the Author

Neera Singh is an Assistant Professor at the Department of Geography and Program in Planning, University of Toronto, Canada. Her research interests include democratization of forest governance, conservation and development, and the affective dimensions of people's relations with forests. She uses interdisciplinary approaches to understand the dynamics of social-nature relations, local visions of conservation and development, and alternatives to market-based approaches to conservation. Prior to her current academic position, she worked for over a decade as a practitioner with issues of forest conservation and sustainable livelihoods in Odisha, India. She founded Vasundhara, a non-profit organization based in Bhubaneswar and provided leadership to Vasundhara in its formative years from 1991 to 2001.

Achim Steiner

Barbara Unmüßig has a compelling vision and articulates it well. Her central premise—that the economic lens reducing all values to a common denominator of money carries important risks—is well taken. I agree that there are limits to substitution between different forms of capital, and there is a clear need to have a precautionary principle in place to protect nature. The issue is in its application and the trade-off between economic activity that benefits society and conservation, and in particular where to draw the boundaries between development and conservation in ecologically valuable areas, a domain which calls for much more thinking and research.

UNEP would have some reservations about the argument that valuing itself is wrong or that markets should be ignored in the context of making a case for conservation and environmental protection. Markets, while imperfect in terms of asymmetry of information, purchasing power etc., have until now treated the environment as a limitless (and therefore unpriced) good in our economy. Reflecting on the importance of nature—giving it a role and weight in economic performance—may help to balance and restore its rightful place at the center of well-being, which is the ultimate purpose of the economy.

Indeed, if we examine the issue in more depth, "pricing" and "valuing" are the same only for market-traded private goods. For public goods, as there are (by definition) no markets, it is important to provide a value in order to prioritize the environment in international negotiations, in national and local public policies, and in business performance calculation and reporting, just to name a few examples. In the case of the latter, the non-reporting of negative externalities is a primary reason why they are allowed to persist to the detriment of public value, at the risk of transgressing planetary boundaries.

Taking this logic further, conventional measurements, of both macro- and microeconomic performance, viz, GDP and corporate profit respectively, are substantially wrong because

externalities are not accounted for, and they will continue to be wrong until the valuing of economic activities also includes their impacts, and the assessment of profits also value the negative externalities of business. In short, you cannot manage what you do not measure.

The concerns Barbara Unmüßig raises with the use of biodiversity offsets are indeed important, given, as she argues, that biodiversity and ecosystem values are site specific and culturally defined. I agree that this is a legitimate concern, as there is a strong moral hazard involved in purchasing offsets, and the "no net loss" position implies de facto strong substitutability. This in fact, demonstrates the reason why we need an ecosystem services approach with valuation appropriately applied.

So, for instance, if the economics of ecosystems and biodiversity (TEEB) approach is applied to offsetting, then there should be no net loss in cultural ecosystem services such as "spiritual experience and sense of space" and "aesthetic appreciation and inspiration for culture, art and design." An offset would not be permissible if for instance local communities have a "lexical preference" for a sacred grove.

To conclude, Barbara Unmüßig is indeed an influential voice, and she is right to alert us to the perils of blind and inappropriate valuation, but by criticizing altogether the use of environmental valuation, we may influence negatively our common goal of enhancing sustainability.

About the Author

Achim Steiner is the current Executive Director of the United Nations Environment Programme (UNEP). He previously served as the Director-General of the United Nations Office at Nairobi (UNON) from March 2009 to May 2011. Before joining UNEP, he served as Director General of the International Union for Conservation of Nature (IUCN) from 2001 to 2006, and prior to that as Secretary General of the World Commission on Dams. His professional career has included assignments with governmental, non-governmental, and international organizations in different parts of the world including India, Pakistan, Germany, Zimbabwe, USA, Vietnam, South Africa, Switzerland, and Kenya. He has worked both at the grassroots level and at the highest levels of international policymaking to address the interface between environmental sustainability, social equity, and economic development.

Author's Response

Response to Comments

I am overwhelmed by the great number of responses that my essay elicited. Many of the submissions completed, enlarged upon, and enhanced my arguments. I was surprised and gratified by the broad agreement with my main theses.

The debate about "valuing nature" and "monetizing nature" raises fundamental questions about whether, and how, we can protect our planet, nature, and biodiversity, and give people a life of dignity and without hardship, either in line with (or contrary to) the capitalist logic and market-compliant instruments. This is an "old" question of environmental policy and the environmental movement. Many find this discussion wearisome and not conducive to our aims; that much is clear from a few of the comments. Such debates about theories and fundamental principles—it is true—do not protect a single ecosystem or save anyone from poverty. Nevertheless, I cannot accept the conclusion that we should give up debating principles altogether, because that immediately rules out thinking in terms of alternatives and looking for different solutions. Pragmatism is important; it makes possible help and protection on the ground. It must not, however, become the pretext for capitulating in the face of every theoretical concern about practical constraints.

Worldwide, we are experiencing how very rapidly the economization of all spheres of life is advancing, and how public goods and commons are being co-opted by the capitalist market. Everything that the market finds "not interesting" and "unprofitable" remains unprotected. We are seeing this in the health sector (e.g., the dearth of research on Ebola viruses), and we are seeing it in our dealings with nature.

I, therefore, again want to differentiate between appreciation of the value of nature, which requires public and communally organized protection—i.e., political primacy, which must be organized democratically and participatory—and the continuing monetization and financialization of nature.

Valuing nature would, in fact, presuppose a strong policy sector, a polity that is democratically controlled and prepared to protect nature. That is what I am arguing for, and it calls for political alliances.

The reality is just the opposite, however: there is too little money for old, let alone new protected areas, and insufficient staff or equipment to police the ecosystems under protection. Governments lack the political will to accord any political priority to nature and ecosystem conservation over infrastructure projects or resource extraction. And there are too few political alliances among civil society organizations with a core focus on the political. Far too many nature conservation and environmental organizations are, themselves, in the business of monetizing nature.

Given the lack of political will shown by governments, they seem to no longer believe in the primacy of the political realm in finding the right interventions. But surrendering to the market, of all things, surely cannot be the alternative.

I clearly understand that the unavailability of public funds for nature and environmental conservation encourages the acceptance of new economic instruments to compensate for the failure of public nature conservation and biodiversity policy. But to my mind, exploiting nature's services as a source of profit per se, and making them an effective financing instrument in environmental and nature conservation policy in the hope of whetting the private sector's appetite for biodiversity conservation, is a misguided way out of the above dilemma.

On the one hand, the underperformance of state biodiversity and nature conservation policy is a problem. On the other hand, state institutions have long since adopted the protagonist's role in the logic of monetization, because it is a project driven by state policy (like financial market liberalization, to give another example). This will be the focus of my attention in the following.

The Real World of Monetization

It is helpful to look at the monetization of nature in the "real world"; this is not a mere academic debate. Processes that can be grouped under the heading of monetization of nature (and nature's services) are already a reality, and significant actors like the World Bank and UNEP are working to implement them.

The most comprehensive global approach to valuing an environmental service (the storage of CO2) is undoubtedly REDD (Reducing emissions from deforestation and forest degradation). When this

forest-related climate mechanism was launched at the Bali Climate Change Conference in 2007, many environmental activists and the forest policy community were initially electrified. REDD seemed to be a way to fulfill an old hope: that forest conservation rather than logging would be a source of profit. Finally, there seemed to be a feasible prospect of making "conservation profitable," in the agenda-setting words of Gretchen Daily from 2002.

REDD very vividly demonstrates how this could work. The environmental service of CO2 storage is quantifiable (x tonnes), so the environmental service can be valued in dollars and cents. But how will a buyer for this environmental service be found? The verdict is unequivocal: the service is only demanded by actors who want or need to reduce CO2 emissions either voluntarily or on the basis of legal provisions.

Payment for this environmental service is linked to the logic of offsetting. Offsetting in most cases is the flip side of the coin of monetization of environmental services. But it brings a highly problematic dependency into play: payment for nature conservation is tied to the destruction of nature. And this is not just a one-off and negotiable compensation measure: it is the standard mechanism.

This occurs in the practice of biodiversity offsets, which are currently a topic of heated discussion, especially in Great Britain. Under such schemes, environmentally harmful projects find it easier to gain backing. The compensation mechanism suggests that nature conservation is not a problem. What is glossed over is that these compensation payments rely on giving parity to things that are fundamentally different. Is it a fact, for instance, that 100,000 mature trees are equally or less valuable than 10 million saplings? Offsetting is based on treating such equations as meaningful because it is assumed that the "services" of the newly planted trees even exceed those of the old ones. This locks environmental policy into a problematic path-dependency: through offsetting, it ties its financing to the destruction of nature, and to facilitate this, environmental harms must be made commensurable. Quantification and, then, monetization are the logical consequences.

The REDD example is also highly instructive for other reasons. Currently, REDD is considered to be the only promising candidate for a relevant market (or at least financing mechanism) for environmental services, because the quantification of CO2 sequestration is supposed to work relatively well. But this means that the complex functions of the forest are reduced to one function (CO2 storage). That is precisely where the monetization of environmental services (to make conservation "profitable") leads:

to the monetization of individual, isolated, quantifiable "services" of nature. Monetization, then, is not just an ideological spectre but a reality, and a close look shows that it usually starts to actually influence actions when it is combined with offset mechanisms and based on oversimplified and dubious quantifications.

Muddled Nature of the Debate

The fact that different definitions of monetization are in circulation makes the debate somewhat confusing. Alongside REDD, the various other PES systems are a further beacon of hope for a new economy of nature, and are not normally tied to offsets. But more recent studies show that PES systems are not based on the quantification of ecosystem services and corresponding payment for them, as the name suggests. In most cases, they are used as mitigation for not engaging in economic activity or as an incentive for green production; in other words, essentially they are no different from agricultural subsidies based on ecological criteria. They are not so much a "payment for ecosystem services" as a "subsidy in disguise."

Monetization as a Commnication Tool: A New Framing

Many commentaries argued in yet another direction. They oppose the monetization of natural functions for a variety of reasons, but see the economic valuation of nature as a useful bridge, a tool. It is the only way, they reason, that the significance of nature and its services can be communicated visibly, and in a language that political decision-makers and companies understand. This rationale is based on an important assumption: that bad decisions with serious impacts are due to inadequate information. Or, to put it another way, rational decisions are based on the most extensive information available. But is it really true that petrochemical companies will desist from their activities if they are fully informed about the value of marine ecosystems? Will mining companies leave the coal in the ground if the value of the biodiversity being destroyed is made economically visible?

Information is not the only relevant factor in decision-making; it is the economic interests and the promises of profits from resource use and degradation that determine the course of action. If we exclusively make information the central issue (which draws no objections at all), we allow power and profit interests to disappear from our radar screens instead of bringing them into focus to prompt the

organization of political opposition. Here, again, we are acquiescing to modes of argumentation that pretend there are no alternatives.

Even a didactically motivated type of monetization must make its case and prove that it makes sense to express the "services of nature" in dollars. Such a view of nature cannot be a pure communication stunt; rather, it implies and consolidates the establishment of an economic framing of nature. Nature and the (capitalist) economy then merge, and nature begins to compete as an economic actor. But this is a specific and by no means uncontroversial view of nature, a new framing, as George Monbiot emphatically states in a recent article on the monetization debate.

What are the consequences of such a new framing? Just that nature's colossal value will be made apparent and comprehensible, even to the biggest dunce or neoliberal hardliner? Or, as is already happening now, that individual services of nature will be recognized as "capital assets" and economically valued? Today, this is already taking place via the CO2 market and for the supply of drinking water. Such specific services of nature (water filtration, CO2 storage) can be monetized with relatively little difficulty. But what are the practical consequences of that kind of monetization? Do they strengthen the right of access to water? Do they secure the sovereignty of local and indigenous communities over their natural resources?

Nature must not be plundered even more by economists

A few commentaries agree with my misgivings about monetization but see it as a necessary step in order to overcome weaknesses in the standard GDP calculations. Negative externalities should and have to be recognized in economic accounting, and this only works via an economic calculation, they say.

"You cannot manage what you don't measure" is the adamant, awe-inspiring dogma that is intended to underpin this line of argumentation. But is it true? This statement, too, is based on the assumption that everything in this world is measurable and can be expressed in GDP-compatible figures. But what if that is not the case? Then what bills will we have to pay? TEEB (The Economics of Ecosystems and Biodiversity) for Business in Brazil calculates that the introduction of genetically modified organisms helped reduce the environmental impact of agriculture by increasing pest resistance and productivity and thereby reducing the demand for pesticides, inputs, and land. Will we have studies that show nuclear power stations having a lower environmental impact than wind power—and will we base our

political decisions on them? Economists supply figures, but are these reliable and neutral? In relation to atomic energy, the figures for the external costs vary between 1 and 100 (euro) cents per kWh, for fossil energy sources between 1 and 25 cents, as the German Federal Environment Agency established in a survey on the calculation of external costs. Do such shockingly large ranges perhaps have something to do with different political valuations? In other words, do we really believe that the economists and their "objective" science can or will provide us with reliable figures?

All monetization approaches cannot avoid one fundamental dilemma: the fact that while some specific "services" or functions of nature are unarguably monetizable and economically usable, the overall function of nature, guaranteeing the basis of evolution through diversity, most certainly is not. Nature monetized will always be nature dismembered into specific functions—or else it will only yield figures that are too vast to have any didactic value.

With the attempts to monetize nature's services, we not only set off down a slippery slope, but do so without good cause or any prospect of good outcomes. But the consequences are immense; with the narrative of nature as economically productive, we accept that nature is in competition with human activities. Which stores more CO2: a natural forest or a plantation? In a recent dispute over the establishment of a protected area, including a managed natural forest in Germany's Black Forest, forest owners stated their case armed with an expert report intended to show that the ecosystem services of the managed forests were superior to those of the natural forest. Is nature conservation in the future to be dependent on reports of that kind by economists? Environmental policy must not fall prey to the economic calculus. If the economic framing is accepted, it must be accepted on principle; used merely as a backup argument for the "good cause," an economically-based line of argumentation rapidly loses credibility.

Monetization, even the kind that is only didactically motivated, reproduces the myth of objective, rational science that becomes the basis for decisions. The economics does not exist, however, which could pass an objective, scientific judgement as to what something like nature is worth to us. There can be no "true value" of an ecosystem. And, nevertheless, countless debates unfold, seminars are held, and papers are written, with a view to determining a definite methodology for the economic valuation of nature and its services. Critics note that many services of nature (e.g., its cultural and spiritual functions) elude monetization. Nevertheless, economists merrily continue to gather data and use assumptions for

their calculations, applying their approach to everything deemed to have potential as an economically convertible and tradable commodity. This economization of nature changes how it is viewed, and ultimately undermines political action, which ought to be committed to public welfare and preserving all nature's functions.

I think there is one conclusion that we cannot avoid: it's not the economy, stupid; it's politics. This applies particularly to economic mechanisms. Markets for CO2 or biodiversity do not just exist; they must be created politically and involve a high degree of regulatory effort. Political follow-through for the conservation of nature is the critical bottleneck, and neither real nor "didactically" motivated monetization can help us through it.